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Chapter 4

Dissociation and Hypnotizability: A Conceptual and Methodological Perspective on Two Distinct Concepts

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Overview

In this chapter, we describe the concepts of hypnosis and dissociation, focusing on the conceptualization of both terms, their phenomena, and their similarities and differences in measurement of hypnotizability and dissociative capacity or "dissociativity." There is a strong conceptual relationship between hypnosis and dissociation. Hypnotizability and dissociation can be conceptualized as dimensional constructs, reflecting ranges of intensity along a continuum. There is some degree of overlap between hypnotizability and dissociation. The exact degree to which there is overlap continues to be a subject of debate. Hypnosis may account for many of the findings attributed to dissociation and dissociative disorders. The viewpoint is described that dissociative processes can range along a continuum from normal dissociation to DSM-IV (American Psychiatric Association 1994) Axis I psychopathology.

Dissociation seems to account for a shift in modern psychology and psychiatry through its widespread clinical relevance and recognition by cognitive sciences. It is strongly related to consciousness, conflict/trauma, and unity of the self. Like hypnosis, dissociation can be measured by various scales, all focusing on slightly different aspects of the concepts and using different meth-

odologies. Dissociation raises fundamental questions about the relation of the mind to the body.

Hypnotic and dissociative capacities are potentially both a liability and an asset. They could be advantageous or beneficial for the human organism in certain contexts or time frames (e.g., forgetting about or not feeling painful stimuli; being distracted from irrelevant information), but high hypnotic and dissociative capacities can be disadvantageous and harmful and can lead to various dysfunctions, pathology (e.g., amnesia, time gaps, flashbacks, conversion disorders), and severe psychopathology (e.g., dissociative identity disorder [DID]). Both hypnotizability and dissociation are related to control versus loss of control over psychological and physical functions. Physical, emotional, or sexual trauma can play a major role in the shift of this control function. Evidence is reviewed that trauma can lead to various dysfunctions that can manifest in psychological and/or bodily or somatic problems. Trauma plays a major role at least in the clinical connection between hypnotizability and dissociation. The methodology of the measurements of both hypnotizability and dissociation can serve an important purpose for a better understanding of their combined meaning in research and clinical practice.

Everyone knows what is meant by *hypnosis* and *dissociation,* even though the specific nature of these terms is difficult to describe. Hypnosis and dissociation seem to be both widely used in modern psychology and psychiatry and are at the same time rather unclear or controversial concepts.

Hypnosis and dissociation have a long history in both disciplines. Hypnosis was first used by Braid in 1843 to describe a state that he termed "neurypnology," whereas Janet wrote about dissociation in 1892 (Ellenberger 1970). Janet first used the term "desagregation mentale" to describe this process. Reviews of the literature of the last three decades shows that a robust physiological phenomenon underlies hypnosis (e.g., see Barber 1961; Spiegel and Vermetten 1994). Moreover, hypnosis has found itself a legitimate place in both medical and psychotherapeutic practice (Frankel 1987), and dissociation has been the focus of attention of a large body of research for approximately a decade (Klein and Do-

ane 1994; Lynn and Rhue 1994; Spiegel 1994). The section on dissociative identity disorders in DSM-IV shows that dissociation has been given a place in diagnostic psychiatric practice and research.

Hypnosis Revisited

Following the decline of hypnosis after Freud, there has been a revival of interest in hypnosis since 1960. The so-called golden age of hypnosis has been one of striking productivity, methodological innovations, and theoretical turmoil. Traditionally, hypnosis has been viewed as having a strong relation to suggestibility, and treatments using hypnosis have been regarded especially applicable in cases of hysterical and neurotic complaints (Ellenberger 1970). There is a long tradition of employing hypnotic capacity in the treatment of these "dissociative psychoses" (Kihlstrom 1994). Early in this century (e.g., through the work of the Dutch psychiatrist Breukink), it was reported that hysterical psychoses were trauma induced and certainly curable and that psychotherapy using hypnosis was the treatment of choice. Hypnosis was used for symptom-oriented therapy, for a comfortable and supportive mental state, and for the uncovering and integrating of traumatic memories (van der Hart and Spiegel 1993). Hypnosis also has been described as "artificial hysteria" (Bliss 1984). Ever since its discovery, hysteria has been linked with forgotten early traumas that were responsible for symptoms of hysteria in patients. These amnestic traumas could in turn be revealed by hypnosis. Now that hysteria as a diagnostic category has gone out of fashion, disorders that previously would have been labeled hysterical are divided by DSM-IV into or among a number of different categories: posttraumatic stress disorder (PTSD), somatoform disorder, conversion disorder, and dissociative disorder. (For a review, see Chapter 1 of this volume.) The focus in these disorders has been on factors different from those explaining and describing hysteria, although the psychodynamic explanation of the symptoms may be the same.

Hypnosis in the golden age has had important impact because of the work of Barber (1969), the neodissociative position of E. R. Hilgard (1977), and the social psychological approach of Sarbin

and Coe (1972), Spanos (1982), and Spanos and Chaves (1989). Hypnosis may be best described as consisting of three factors: absorption, dissociation, and suggestibility (Spiegel 1991). No one factor can explain the concept of hypnosis completely. In this three-factor concept, *absorption* is described as the narrowing of attention and a disposition for having episodes of single total attention that fully engage one's representational resources. *Dissociation* is described as a kind of divided or parallel access to awareness, wherein several systems may occur seemingly independently. *Suggestion* is described as a certain role behavior or the nonvolitional transformation of a suggested idea to a suggested effect. Dissociation is only one aspect of this conceptualization of hypnosis. Different researchers and therapists emphasize the different factors, dissociation, absorption, and suggestibility, in their use of hypnosis. The literature includes lively debates about state and nonstate issues regarding hypnosis and hypnotic susceptibility or hypnotizability (Barber and Wilson 1977; Coe 1973; Orne 1977). The controversy was not so much about the reality of the responses that were observed, but was about whether the state was an explanation in itself or whether it needed explanation. An ego psychology definition that describes both a "state" and a "talent" regarding hypnosis and hypnotic susceptibility is as follows:

> Hypnosis is an altered state of consciousness into which people can go if they have the talent to do so: in which they experience heightened ego receptivity (equals suggestibility) and ego activity; attention changes; more primary process thinking, more imagery; dissociative phenomena (for instance, the observing ego versus the experiencing ego); regression in the service of the ego; fading of the Generalized Reality Orientation; and stronger and quicker transference phenomena. (Fromm and Nash 1992, p. 85)

Classical phenomena of hypnosis are amnesia; catalepsy; ideomotor phenomena, such as automatic writing; posthypnotic effects with amnesia for the event; hypermnesia; age regression; and hallucinatory phenomena, with either positive or negative hallucinations. Traditionally, the state of hypnosis occurs after an

induction procedure. Whether this procedure must be formal or can be informal can be and has been argued. Through research it was possible to gain substantial agreement upon the classical representative phenomena of hypnosis (E. R. Hilgard 1987).

Despite different descriptions of the conceptualization of hypnosis, its current contribution to medical and psychotherapeutic practice has never been more important. The recent renewed interest in cognitive psychology with its rediscovery of the unconscious, the influences of information-processing theories linked to computer systems, and the attractive practical uses in therapy that evolve from these perspectives has given hypnosis a strong and steady push forward in the acknowledgment of its value.

Dissociation, Neodissociation Theory, and Neural Network Models

Dissociation is ubiquitous, a priori a necessary and normal mental process. It can be viewed as being the opposite of what occurs in common life and can be viewed as the integrative function of the mind. Different stimuli (e.g., visual, acoustic, or sensory) are dissociated at root but "automatically" are formed into one piece of memory, establishing coherence and identity (Spiegel and Cardena 1991b). Dissociation seems to prohibit this integrative function and compartmentalizes different experiences. Dissociation may take the form of a physical sense (e.g., a hypnotized subject experiences one hand as being not as much a part of his or her body as the other hand). There is an involuntariness to movements, numbness, and tingling, and the hand seems to be constituted in a different relation to the rest of the body, as if two separate systems for interpreting somatic perception were occurring at the same time rather than one system incorporating similar sensations from all parts of the body (Spiegel 1990). Time distortion, negative hallucinations, and posthypnotic amnesia can be viewed as being dissociative symptoms occurring in or after hypnosis. In the dissociative process, bodily perceptions can change, as well as mental, behavioral, and emotional perceptions:

> I look at my hands, which are writing this; how odd it is! Are they really concerned with what they are doing? I look at my reflection in the window, and find myself to be strange, novel. For a moment I was almost afraid of the image the window pane returned to me—of this phantom of myself. (Nemiah 1995, p. 1289)

Or,

> Things don't look the way they used to. Everything I see, even the decorations on the wall of my room, seem strange to me. It's as if I were seeing everything for the first time. Everything appears unreal to me. When I go out, it seems to me that the street is not the same. It's like a city I haven't seen for a long time. Suddenly everything around me gives me the effect of having become odd. It's as though reality were deformed. (Nemiah 1995, p. 1289).

Symptoms or phenomena of more severe and potentially pathological dissociation are stupor, derealization, depersonalization, numbing, and amnesia for the event:

> A Vietnam combat veteran who reported "I felt myself separating from myself and looking down at the person who was in combat, and feeling sorry for him" dissociated, leaving his body stuporous and numb on the battlefield. Later he had no memory for what happened. (Bremner et al. 1992, p. 331)

Dissociation as a concept is supposed to describe and, through theoretical underpinning, explain symptoms of fragmentation or loss of integrative functions. It can do so by the assumptions that there are changes in the continuity of awareness and that there are altered or parallel layers of consciousness.

Of importance in the theoretical framework of dissociation has been the previously mentioned neodissociation theory of E. R. Hilgard (1977, 1986), which expands on the concepts of hypnotic dissociation and Janet's ideas of dissociation. E. R. Hilgard emphasized a horizontal rather than a vertical depiction of the relation between conscious and unconscious states (i.e., when two tasks are performed simultaneously, one on a conscious and one on an unconscious level, each is performed less efficiently because of the

effort required for the other task and because of the effort to keep the unconscious task out of awareness). For example, when a subject's arm is made to rise in the air, the cognitive control structure for the arm has been dissociated from the main part of the central control structure. E. R. Hilgard's theory involved the coexistence in connection with the same organism of two separate streams of consciousness that are coactive and that pursue their courses not necessarily without mutual interference, but with limited mutual cognizance and a large measure of independence. His theory was not complete but served as a mapping out of the direction that a theory of hypnosis and dissociative phenomena should take.

The neodissociation theory now unwittingly seems to fit with neural network models, with subsequent connectionist viewpoints on learning and memory, and with physical evidence of the parallel distributed nature of various aspects of the functioning human brain (Parks et al. 1991). The social organization of mind contributes also to the modern assumption that memory processes are dissociated in nature (Minsky 1986; Spiegel and Cardena 1991b). Hypnotic dissociation has been described in recent models of neural networks regarding nonlinearity of long-term memorizing processes (Kuzin 1995; Li and Spiegel 1992). Together with clinical observations and research on dissociation, these neodissociation ideas seem to constitute an important shift for psychology and give dissociation a legitimate place in cognitive science because parallel distributed processing (PDP) models and neural network models have been fruitful concepts when they have been applied to simple learning and to attention, memory, language, and perceptual and motor processes (Corbetta et al. 1990; Feldman and Ballard 1982). An example of the parallel operation of two high-level information processors is the "hidden observer" phenomenon in the neodissociation theory of E. R. Hilgard (1977, 1992), in which a highly hypnotizable subject is able to produce analgesia for pain, and yet a hidden proportion of consciousness acknowledges feeling sensory pain and marks considerable discomfort. The hidden-observer theory allows for separate nonconscious parallel processing of all perception, isolated from awareness via amnesia and retrievable via a hidden observer. The

narrowing of the awareness indeed affects the way in which the percepts are processed: there is reduction of cortical processing of the dissociated percept (Sigalowitz et al. 1991; Spiegel et al. 1985, 1989).

Conceptual Issues in Dissociation: Consciousness, Conflict, and Unity of the Self

Dissociation as a concept has been criticized as an oversimplification of the complexity of human behavior and human suffering (Frankel 1991). Dissociation is also described as a metaphor that can be better understood in the vocabulary of skills rather than in the vocabulary of autonomous state of mind or personality traits (Sarbin 1994; 1995). There has been, and still may be, a lively debate about differences between repression and dissociation. Both are contents of the mind and are banished from awareness, but there is no consensus yet about how and where both concepts differ (Cardena 1994; Kihlstrom 1987; Singer 1990; Spiegel 1990).

Despite the criticism, there seems to be sufficient agreement that dissociation is fundamental to cognitive function (Kihlstrom et al. 1994). The term has been used in cognitive psychology to describe differential performance in tasks presumably mediated by distinct mental processes or to explain performance in free recall completion tests (Denny and Hunt 1992; Goodglass and Budin 1988). In the field of personality and clinical psychology, dissociation is described as resembling semi-independent mental modules that are not consciously accessible, as representing an alteration in consciousness where the individual becomes disconnected or disengaged, and as a defense mechanism warding off physical or emotional pain or other alterations of consciousness. The term should not be overextended (e.g., used as a shorthand for any kind of conscious or alternate mental process or used in arguing that not all state-dependent memory is dissociative in general) (Cardena 1994). Cardena (1994) reports on different fields of study wherein dissociation is used as a descriptive or explanatory concept for apparently disparate phenomena ranging from hypnosis

with perception without awareness, to forms of psychopathology, to cognitive responses to trauma and particular neurological syndromes. He proposes a model whereby dissociative phenomena are arranged along two orthogonal dimensions of normality/pathology and psychological/neurological causation. Hypnosis, together with out-of-body experiences and automatisms, is localized in this model in the lower-right quadrant, the psychological-normal cluster.

In a psychobiological model, dissociation has been described as representing a process whereby certain mental functions that are ordinarily integrated with other functions presumably operate in a more compartmentalized or automatic way, usually outside the sphere of conscious awareness or memory recall (Ludwig 1983). Dissociation is depicted in this model as having great individual and species survival value. The processes, or the consequences, of dissociation are measurable, sensible to cultural differences, and important in the mind-body relationship (Spiegel 1994). Nemiah (1993) described the broad field dissociation can cover and the impact it can have on an individual:

> The term dissociation refers to the exclusion from consciousness and the inaccessibility of voluntary recall of mental events, singly or in clusters of varying degrees of complexity, such as memories, sensations, feelings, fantasies, and attitudes. (p. 106)

Underlying the theoretical concept of dissociation and its presumed survival value, concepts concerning consciousness, conflict, mind-body relationships, and unity of the self can be found. A functional conceptualization leading to an etiological description and a discussion of how and where dissociation affects the mind-body relationship are explained separately later in this chapter. Consciousness, conflict, and unity of the self are described in relation to dissociation as follows:

1. *Consciousness.* In most of the recent literature on dissociation, when the term *consciousness* is used, the approach is phenomenological and descriptive rather than conceptual and construc-

tive. This approach is similarly used for the term *unconscious.* The unconscious in this respect is not a conceptual construction or an imaginary entity created to explain phenomenal facts, as it is in a psychoanalytical perspective. Dissociation is a description of phenomenological facts and can be viewed as a unique form of consciousness. Dissociation enables (or causes) detachment from anticipation or actual experiences of fear, pain, and helplessness (Bremner and Brett 1997; Marmar et al. 1994; Spiegel 1990, 1993; Spiegel et al. 1988). Dissociation can be viewed as the lack of connection between one piece of memory or consciousness and another (Bremner et al. 1992). PDP can be used to model the dissociative mental processes. Both the conscious/unconscious and the dissociation/integration (or dissociation/association) dichotomies are descriptive in their primary purposes, with emphasis placed on the absence or presence of awareness in the former and memory or perception in the latter.

2. *Conflict.* The defense-deficiency controversy regarding dissociation has led to lively debates (Cardena 1994; Erdelyi 1994; Gabbard 1994; Singer 1990). This controversy recalls the debate at the beginning of this century between Janet and Freud. According to Freud, dissociation was an active defense phenomenon. When the integrity of the overall system was threatened, subsystems of ideas/wishes/memories/thoughts would be forcibly repressed, dissociated, or split off. In Janet's theory, dissociation was a deficit phenomenon, an insufficiency of binding energy, caused by hereditary factors, life stresses or traumas, or an interaction among them modeled on Hughlings Jackson's hierarchy of mental functions. These processes resulted in the splitting of fragments. In Jackson's theory, dissociation had to do with a lack of integration between mental processes and especially an inaccessibility of mental contents or processes to phenomenological awareness.

   Regarding the differences between dissociation and repression, Kluft (1991) states that the dissociated material maintains in the dynamic unconscious, in a series of parallel consciousnesses. Dissociation defends against traumatic experiences as-

sociated with external events, and repression defends one from forbidden internal wishes. But why dissociation is a defense against external stimuli and repression is a defense against anxiety-provoking internal stimuli has not been resolved. In dissociative amnesia, the memories are internal even though the trigger may have been caused environmentally or externally (Cardena 1994). Dissociation and repression seem to be similar, but their theoretical underpinnings differ.

The dissociation in memory is different in Freud's conversion notion. It is not that repressed memories are converted into symptoms, but in the absence of conscious recollection, the sequelae of trauma/conflict persist in procedural formats. Erdelyi (1994) tried to overcome the controversy when he proposed an alternative to Freud's conversion hypothesis, stating that repression defeats declarative memory but it does not affect procedural memory. Traumatic memory in this model preferentially involves procedural memory.

3. *Unity of the self; autobiographical memory.* Dissociated mental contents are not consciously linked with one's history or sense of the self. The state of emergency in the self triggers a defensive reorganization of consciousness, an attentional shift that excludes aspects of the self from the context of experience. The continuity of experience should not be taken for granted; the continuity of experience, memory, and identity is an accomplishment (Spiegel 1991). Self-organization exists because of reciprocity of dissociation-association, which is under continual construction. Dennett (1991) describes the self as the center of narrative gravity, stressing the need for giving verbal account of experiences to promote integrative functions. What can be forgotten and what needs to be remembered therefore must be consciously processed first, and preferably discussed, before they can be stored in memory. Creating a spatial-temporal track of both the immediate past and the ordinary continuity of experience is important. Synthesis of self-experience then takes place automatically and unconsciously. Kihlstrom (1992) discusses the difference between dissociation and automaticity. According to Kihlstrom (1992), dissociation

can delete the spatial-temporal context that is normally associated with memory for events, leading to a disruption of episodic memory and autobiographic memory. As such, dissociation is made manifest by a failure to integrate thoughts, feelings, memories, and actions into a unified sense of consciousness. Dissociation in DID is observed when cohesion of the subselves that form a unity is lost and when subselves act independently or in a contradictory manner.

Dissociative phenomena demonstrate that coherence of identity is not automatic self-evidence from which symptoms may be subtracted. Integrated identity is an accomplishment that is subject to disruption through trauma, hypnotic influences, or dysfunctions in information-processing strategies (Kihlstrom 1987; Spiegel and Cardena 1991b). We construct a sense of personal continuity by maintaining a consistent stream of memory, a kind of smoothing function in which we subsume disparate experiences under a common heading of personal integrity and identity (Spiegel 1990).

Overwhelming experiences might not be processed in an integrated manner. The information is not lost but encoded in terms of emotion and personal identity. Encoding the experience emotionally is a state-dependent and momentary reaction that protects the individual, with an automatization of cognitive and motor procedures. Encoding the experience in terms of personal identity occurs within a certain time span and has a more reflexive, self-referential nature (Kihlstrom 1987), contributing to the process of identity alteration.

A Functional Conceptualization of Dissociation

Dissociation could be conceptualized as a specific response to overwhelming stimuli. Ludwig (1983) favored individual and species survival value as being the psychobiological functions of this response. He argued that dissociation could represent the fundamental psychobiological mechanism underlying a wide variety of

altered forms of consciousness. In evolutionary history, these ideas could be related to the freezing response of animals confronted with a predator or other life-endangering threat or could be related to other primitive coping styles against fearful situations. Ludwig (1983) described dissociation and the dissociative process.

The adaptive value of dissociation has led to different descriptive models of dissociative disorders. Dissociative phenomena have been described as existing on a continuum and as becoming maladaptive when they exceed limits in frequency or intensity or when they occur in contexts that are inappropriate (Putnam 1989). Only in extreme cases does dissociation give rise to a set of psychiatric syndromes known as the dissociative disorders (Putnam 1991).

Phenomena occur that are described in DID or multiple personality disorder (MPD) patients at the moment of a switch between altered states: automation of behavior, resolution of irreconcilable conflicts, escape from the constraints of reality, isolation of catastrophic experiences, cathartic discharge of feelings, submersion of the individual for group identity, analgesia, and depersonalization (Putnam 1988). Reorganization occurs in a switch process, as Putnam (1988) describes it, and changes state-related variables, such as affect, access to memories, sense of self, and cognitive and perceptual styles. The switch process is often reflected in alterations in facial expression, speech and motor activity, and interpersonal relatedness. These alterations are characterized by an apparent general polarity, with an "on-off" quality. An example is hyperarousal (flashback) alternating with detachment and numbing (derealization and depersonalization) (Spiegel 1993). Herman (1992) describes this oscillation as the dialectic of trauma.

The central and organizing paradigm for dissociation seems to be linked with a sudden activation of altered states of consciousness as a reaction to psychological trauma. These experiences induce an altered state in which memories and affects relating to the trauma are encoded. After trauma, there is often posttraumatic amnesia for these events; however, the memories and affects may manifest themselves in nonverbal forms. Amnesia in an undifferentiated form can be a manifestation of the barrier between what

is and what is not integrated. In the case of psychogenic amnesia, Loewenstein (1993) differentiates two subgroups in the disorder: 1) amnesia that is primarily related to traumatization and 2) amnesia that develops in the context of overwhelming psychological conflict in an individual predisposed to dissociate.

Regarding the dissociated experience mechanism of dissociation, in which an amnesia-like barrier keeps (traumatic) experience out of consciousness, Miller and Bowers (1993) describe a different model in which a dissociated control mechanism rather than a dissociative experience explains the dissociation. Their view of dissociated control implies that suggestive communication can more or less directly activate subsystems of control and minimize the influence of executive initiative and effort. They represent an opposite position regarding the neodissociation theory of E. R. Hilgard. In their view, dissociated control is central to the nonvolitional hypnotic responding.

Some Elements Describing Hypnotic and Dissociative Processes

Some fundamental descriptions of hypnosis and dissociation are similar. They are related to what Counts (1990) described as the importance of making a distinction between different frames of reference in the process of dissociation compared with the content of dissociation. Evans (1992) proposes the same distinction between dissociation of content and dissociation of context, discussing the issue of source amnesia. The content may be an affect or a visual image that can be reported after the process of dissociation. The following three issues concerning the processes of hypnosis and dissociation should be considered:

1. *Descriptions of context and content.* The word *dissociate* is often used as a verb in clinical settings: "This patient is dissociating." Statements of this kind are often heard on clinical wards. Categorizing a patient can occur when therapists do not specify what caused the dissociation or what was dissociated. Of rele-

vance can be whether the dissociation concerned memories, sensations, feelings, fantasies, or attitudes (see definition of dissociation, Nemiah 1993). Adding information about the context and content of the dissociation could be more beneficial for the patient.

2. *Frames of reference: subjective experience versus observable behavior.* Different frames of reference can be taken into account to describe the process of dissociation. The subjective experience of perceptions, the more objective behaviors, or both may indicate the process of dissociation. While dissociating, patients may interpret their subjective experiences differently from the way they interpret them some moments later. Self-reports of patients who spoke about numbness, who felt as if they were somewhere else, or who had amnesia for a certain time frame indicate that the verb dissociate can also be used in the past tense: "The patient dissociated." Consequently, the term refers to the content of the phenomena. Dissociation is the split in the perceptual or cognitive mode; the split itself is a process. One might suggest, based on observable phenomena, that at the time of the split the patient is in hypnosis or in a trance (it can be hard to distinguish whether this really is or was the case). After hypnosis, the perceived subjective hypnotic experience can be taken into account. However, the observed phenomena in (formally) induced hypnosis are easier to distinguish because one can see what the behavior of the person is related to exactly. In the case of spontaneous trance, this observation is much more difficult. Therefore, at the time of dissociation, only the context and the observable behavior can be taken into account to describe what is happening.
3. *Involuntariness.* Involuntariness is a fundamental feature of hypnotic responding. Most individuals who successfully carry out a suggestion report that the response takes little or no effort and seems to happen by itself. Highly hypnotizable individuals experience hypnotic suggestions as involuntary, even while engaging in conflicting thoughts and imagery and attending closely to their behavior. These findings are precisely what dissociation theory would predict. If a person is given a suggestion

of arm rigidity, the person's volition seems to play no part in making the response happen, even though he or she is trying as hard as he or she can. Being physically able to bend the arm, the person must be doing something to prevent it from bending. Involuntariness goes beyond a sociocognitive theory of hypnosis (Zamansky and Ruehle 1995). A comparison between dissociation and sleeping can be made: just as someone cannot consciously start sleeping or fall asleep, one cannot consciously dissociate. It can be said that someone was sleeping for a certain moment or period, but the statement "I am sleeping right now" seems illogical. If said, it is meant in relational terms. Both dissociation and hypnosis do not have a relational meaning per se; they are personal reactions to environmental stimuli.

Hypnotizability Scales

In research and clinical practice where hypnosis is used, the importance of hypnotizability ratings is strongly stressed. These ratings are important for research purposes and predict prognosis to therapy when hypnosis is used. Different hypnotic susceptibility or hypnotizability scales have been developed, and their names (susceptibility versus hypnotizability) favor a conceptual standpoint regarding hypnosis. In the 1980s, there was vivid discussion about the style of hypnotic communication, which resulted in the conclusion that these variations in style were less important than the subject's characteristics or the subject's hypnotizability. The same could be said for preferences in using one of the scales (Spinhoven et al. 1988).

Hypnotizability is normally distributed in the general population and slowly declines with age (E. R. Hilgard 1965). A great deal of research has shown that hypnotizability is a fairly stable trait for individuals over time (J. R. Hilgard 1979; Morgan et al. 1974). Test-retest correlation of .60 over periods of 10–25 years have been shown (Piccione et al. 1989). Hypnotizability seems to peak between ages 6 and 10 years and then begins a gradual decline until death (Morgan et al. 1974). Approximately 10%–15% of the population are highly susceptible to hypnosis, 10%–15% are unrespon-

sive, and the remaining 70%–80% are moderately susceptible to varying degrees (Perry et al. 1992). (For a review of the measurement of hypnotizability, see Perry et al. 1992). The following seven scales, in chronological order, can be considered most representative of the field of hypnotizability scales:

1. The development of the Stanford Hypnotic Susceptibility Scale, Forms A, B, and C (SHSS; Weitzenhoffer and Hilgard 1959, 1962) can be considered a milestone in the field of hypnosis research. This scale consists of 12 items of progressive difficulty. The administration of the scale takes at least 45 minutes. The scales are behaviorally oriented and scored for subjects' observable responses rather than internal experiences. Scores range from 0–12. Items include, for example, postural sway, arm rigidity, or verbal inhibition. Form C differs because items are tested in order of increasing difficulty, and newer items of greater difficulty are included (e.g., age regression, anosmia to ammonia, a negative visual hallucination). The scales were later criticized by their senior author because they lacked measures of classic suggestion and involuntariness (Weitzenhoffer 1980). Morgan and Hilgard (1978–1979) developed an analogous scale for children, the Stanford Hypnotic Clinical Scale for Children (SHCS Child). This is a short scale composed of seven items pertinent to clinical hypnosis, with items such as hand lowering, arm rigidity, visual and auditory hallucination, dream, age regression, and posthypnotic suggestion.
2. The Harvard Group Scale of Hypnotic Susceptibility (HGSHS; Shor and Orne 1962) is a group version of the SHSS. The scale was originally designed as a screening instrument for research purposes; therefore, it is less ideal for clinical purposes than the SHCS–C. In the HGSHS, the subject is asked to give a subjective estimate of what an observer would have seen as reactions on items similar to the SHSS–A and B, such as hand lowering, arm rigidity, communication inhibition, and experiencing a fly (e.g.,"You were told to become aware of the buzzing of a fly which was said to become annoying, and then you were told to shoo it away. Would you estimate that an onlooker would have

observed you make any grimacing, any movement, any outward acknowledgment of an effect?"). Induction and testing are similar to SHSS. Psychometric features (reliability and validity) are satisfactory. The scale has norms for large samples of control subjects, as well as cross-sectional and cross-cultural norms (Coe 1964; Lamas et al. 1989).

3. At the same time of the SHSS and the HGSHS, a Children's Hypnotic Susceptibility Scale (CHSS) was developed by London (1962). The instructions were given depending on the age of the group, 5–12 or 13–17 years. Items, testing, and scoring are similar to the SHSS.
4. The Barber Suggestibility Scale (BSS; Barber 1965) did not depend on the induction of a standardized hypnotic state. The instructions make no mention of hypnosis. The procedure is analogous to the SHSS, and the scale contains eight items (e.g., arm lowering, hallucination of thirst, body immobility). Subjects receive both objective and subjective scores on this scale, each having a maximum score of 8.
5. The Hypnotic Induction Profile (HIP; D. Spiegel, unpublished instrument, 1977; H. Spiegel and D. Spiegel, unpublished instrument, 1978) is different from traditional susceptibility scales. It includes questions about the subjective experience of dissociation and involuntariness. It was designed to be used in a clinical setting and takes 5–10 minutes to administer. The HIP is purported to be a measure of clinically usable hypnotizability. It measures eye roll, which is the degree to which subjects can roll the eyes upward and keep them in this position while closing the eyes. The induction consists of an arm levitation with a posthypnotic suggestion, followed by questions of the subjects' experience of trance. Differing from other scales (e.g., the control differential) in which subjects compare sensations in one arm that is in an upright position with the opposite "neutral" arm, the HIP does not rely as much on overt behavior as the SHSS but includes a large subjective component. The induction score is a sum score. Items constituting the induction score are dissociation, challenged arm levitation, sense of involuntariness, response to the cutoff signal, and sensory altera-

tion; there are 2 points given for each item, with scores ranging from 0 to 10. The induction score had a test-retest reliability of .76 and interrater reliability of .75. The scores for the eye roll on these items were .90 and .73–.80. There are moderate correlations with the SHSS (Frischholz et al. 1980; Orne et al. 1979). One study reports a correlation of .63 between the HIP and the SSHS among 61 highly motivated subjects (Frischholz et al. 1980).

6. Spanos et al. (1983) developed the Carleton University Responsiveness to Suggestion Scale. This scale contains seven items, of which two are ideomotor (arm levitation and arms moving apart), two challenge (catalepsy and immobility), and three cognitive suggestions (visual and auditory hallucination and amnesia). It takes 6 minutes to administer the scale. The scale can be used in a group or on an individual basis. Subjects receive objective, subjective, objective involuntariness, and voluntary cooperation scores. There is little reported research on this scale (Perry et al. 1992). Recently, a new instrument has been developed called the Phenomenology of Consciousness Inventory (Forbes and Pekala 1993). This is a self-report inventory on the experience of hypnosis. The inventory is developed to be a useful instrument in predicting hypnotizability in a less obtrusive fashion than the HGSHS.
7. Recently, a hypnotic susceptibility scale for the deaf was developed, the University of Tennessee Hypnotic Susceptibility Scale for the Deaf (UTHSS–D; Repka and Nash 1995). This is a signed videotaped version of a standard hypnotic induction with 12 standard suggestions. When this scale was administered, deaf participants were found to be less responsive to hypnosis when assessed behaviorally but equally responsive to hypnosis when assessed subjectively.

Dissociation Scales

In the last decade, several scales used to measure dissociation have been developed. The following list of 13 scales is not a thorough

one; these are the most recent and, to different extents, well-developed ones. Most of these scales focus on depersonalization-derealization and other classical hypnotic phenomena as they occur in daily life. The first report of a scale measuring dissociation dates back to 1985 and is based on DSM-III-R criteria (Steinberg 1985).

1. The Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D; Steinberg 1993) is a semistructured diagnostic interview for assessing five core dissociative symptoms: amnesia, depersonalization, derealization, identity confusion, and identity alteration. It assesses presence, severity, and phenomenology of these five symptoms. It is modeled on the format of the Structured Clinical Interview for DSM-III-R (SCID), developed by Spitzer et al. (1987). Each question is open-ended to allow the subject to use his or her own descriptions. The SCID-D contains no direct questions about trauma; it does contain questions about dissociative defenses that enabled the subject to survive traumatic experiences. The SCID-D has shown good reliability and validity (Steinberg 1994). The interview takes 30 minutes to 1 hour. The questions are asked in a way that the subject can describe the frequency of the suggested dissociative symptom (e.g., "Have you ever felt as if there were large gaps in your memory?" or "Have you ever felt as if there is a struggle inside of you?"). Amnesia often shows highest differences between patients and control subjects (Bremner et al. 1993d). The mini-SCID-D is an abbreviated version of the SCID-D. The miniscale is also based on DSM criteria for dissociative disorders. This scale seems to be more focused on experiences of dissociation per se and is less saturated with normal experiences of absorption and imaginative involvement (Steinberg et al. 1990).
2. Dissociation can also be measured by using the Dissociative Experiences Scale (DES; Bernstein and Putnam 1986), a self-report screening instrument containing a number of items tapping disturbances of awareness, memory, and identity, including depersonalization and derealization. The percentage of time

that the subject experiences a symptom is marked on a visual analogue scale. The sum of scores is divided by the number of items in the list. The scale takes about 10 minutes to complete and yields item and total scores ranging from 0 to 100. A score of 25 indicates that the subject reports dissociative symptoms 25% of the time. Kihlstrom et al. (1994) summarizes seven research studies indicating discriminant validity for the DES as a measure of dissociation. This scale is configured so that it assumes dissociation to be a normal experience; all items are added to determine a total score, and there is no cutoff point on each separate item that makes a distinction between normal and pathological experiences. According to the developers of the scale, reliability testing showed that the scale had good test-retest and good split-half reliability. Item-scale score correlations were all significant, indicating good internal consistency and construct validity. In a factor analysis of the DES, three underlying dimensions repeatedly emerged: absorption and imaginative involvement, amnesia and other activities of dissociated states, and depersonalization/derealization (Ross et al. 1991). Other analyses show that similar but more factors emerged: fantasy and absorption; different types of amnesia, including segment amnesia (inability to remember some aspect of one's life), critical events amnesia (inability to remember important life events), and in situ amnesia (in which one awakes to the current situation); depersonalization; different selves; and denial of dissociation (M. J. Angiulo and J. F. Kihlstrom: "Dissociative Experiences in a College Population," 1993; Ray et al. 1992; W. J. Ray, M. Faith, and J. Mathieu: "Factor Structure of the Dissociative Experience Scale: A College Age Population Study," 1992). Fischer and Elnitsky (1990) found disturbances in cognition control to be the most replicable and reliable factor for the DES. The DES has proved to be a reliable measure. The predictive capacity of the DES, with a cutoff score of 30 in a large (n = 1934) multicenter study, showed a sensitivity rate of 74% and a specificity rate of 80% (Carlson et al. 1993). A Child Dissociative Checklist (Putnam et al. 1993) (see item 4) has been developed and an Adolescent DES (DES-A) is being developed

by the same authors of the DES. No data have yet been published on the latter scale.

3. The Dissociative Disorders Interview Schedule (DDIS; Ross et al. 1989a) is a structured interview for diagnosing dissociative disorders. This questionnaire consists of 131 questions and items, divided into 16 sections, that help to develop a fuller clinical picture and differentiation between schizoaffective disorder, borderline personality disorder, and atypical dissociation. The subject is asked to respond yes, no, or unsure on all questions. This interview includes all symptoms of somatization, in addition to a variety of dissociative symptom clusters; it gathers information about physical and sexual abuse and documents prior psychiatric treatment. The interview can be administered in 30–45 minutes.
4. After Hornstein and Putnam (1992) investigated the phenomenology of child and adolescent dissociative disorders and concluded that there was good construct validity for assessing dissociative disorders in childhood, a Child Dissociative Checklist (CDC; Putnam et al. 1993) was developed. Until this scale was developed, no measures of dissociation existed for children younger than ages 12–14 years. This scale is a 20-item observer-report measure of dissociative behaviors exhibited by children. The CDC includes questions about amnesia, alterations in identity, hallucinations, spontaneous trance phenomena, rapid shifts in demeanor, access to information, skills, knowledge, habits, and age-appropriate behavior. The CDC had a 1-year test-retest reliability of .69 in 73 subjects, including healthy control girls and sexually abused girls. The CDC had high discriminant validity among four test samples, including healthy control girls, sexually abused girls, boys and girls with dissociative disorder not otherwise specified, and boys and girls with MPD. The CDC is intended to be used as a clinical screening instrument and as a research measure; it is not designed to be used as a diagnostic instrument.
5. The Clinician-Administered Dissociative States Scale (CADSS; Bremner et al., in press) is a clinical scale for measuring dissociation in clinical observations at specific times. It is used to as-

sess symptoms of amnesia, depersonalization, and derealization. After assessing 23 items in an interview, the observer scores the behavior of the subject at the time of the interview through a series of 5 questions, including "Does the subject appear to be separated or detached from what is going on, as if not part of the experience or not responding in a way that you would expect?" The observed phenomena are not induced. Psychometric assessment of the CADSS showed convergent validity with other measures of dissociation and high levels of interrater and test-retest reliability (Bremner et al., in press).[1]

6. The Perceptual Alteration Scale (PAS; S. Sanders 1986) contains items tapping normal states of absorption and imaginative involvement. A factor analysis study in 507 undergraduate students showed disturbances in affect-control to be the most reliable dimension of two scales measuring dissociation (Fischer and Elnitsky 1990). This scale has not been tested in clinical populations and therefore has no clinical reliability or validity.
7. No data on the Questionnaire of Experiences of Dissociation (QED; Riley 1988) are available yet, except the initial report data on reliability and validity. Like the PAS, this scale contains questions about absorption and imaginative involvement.
8. Briere and Runtz (1990) have developed a dissociative subscale that complements the Hopkins Symptom Checklist—90 (HSCL-90; Derogatis et al. 1974), a self-report measuring general psychopathology with nine subscales. This subscale is sensitive to a history of trauma and to elevations on DES and DDIS dissociative symptom clusters.
9. The Dissociation Questionnaire (DIS-Q; Vanderlinden et al. 1993) is a diagnostic screening scale that contains 63 items, assessing 4 factors: identity confusion and fragmentation, loss of

[1]The CADSS is available on the World Wide Web at the following address: http://info.med.yale.edu/psych/org/ypi/trauma/cadss.txt

control, amnesia, and increased concentration. Subjects report how much each item relates to their situation. A maximum score of 5 points is given for each item, and the total score is divided by the amount of items. A cutoff score of 2.5 for the total scale is suggested; cutoff scores for separate factors are being developed. This self-report method is useful; a comparison study with the DES shows a correlation of $r = 0.85$ in a study by Vanderlinden et al. (1991) and $r = 0.87$ in a study by Sainton et al. (1993).

10. The Stanford Acute Stress Reaction Questionnaire (SASRQ) is a self-report measure. Respondents indicate the frequency with which they experience a variety of dissociative and anxiety symptoms during or after a stressful event. Versions of this measure have been used in studies assessing acute reactions to an earthquake (Cardena and Spiegel 1993), to an execution (Freinkel et al. 1994), and to a firestorm (Koopman et al. 1994). Internal consistency using Cronbach's alpha has been found to be high overall (.93) and also high for particular symptom subscales (.72–.88; C. Classen, unpublished data, May 1996). The concurrent validity of this measure is supported by the strong correlations obtained between overall SASRQ symptom scores and scores on the subscales of the Impact of Events Scale (IES; Horowitz et al. 1979) ($r = .83$, $P < .0001$ for intrusion; $r = .59$, $P < .001$ for avoidance) and between the SASRQ symptom subscale scores and the IES intrusion ($r = .57–.89$, $P < .001$) and avoidance ($r = .44–.54$, $P < .01–.001$) subscales.
11. The Dissociative Experience Questionnaire (DEQ; Marmar et al. 1994) is a scale ranging from 0 to 13, and it consists of 13 questions. The score on the DEQ is determined by the total number of positive responses to 13 questions about dissociative states. The scale measures dissociative states during trauma. Subjects are asked to relate their most traumatic event (e.g., combat, childhood), and the DEQ is used to assess dissociative states at that time.
12. The a dissociative subscale for the Minnesota Multiphasic Personality Inventory–2 (MMPI–2; Hathaway and McKinley 1989) was developed by (Waelde et al. 1995). When using the DES to

discriminate high and low dissociation (cutoff score of 30) in a group of 211 Vietnam veterans, investigators found that 16 items of the MMPI–2 discriminated significantly ($P < .001$) between the dissociation groups when generalized psychopathology was statistically controlled. The scale correlated significantly with the DES and DEQ and had good internal consistency.

13. The Somatic Dissociation Questionnaire (E. R. Nijenhuis et al.: "Somatic Dissociation Questionnaire," unpublished document, 1996) is being developed and focuses on bodily experiences to assess dissociative symptoms.

Similarities and Differences in Measurements of Hypnotizability and Dissociation

Our understanding of hypnosis and dissociation is in part shaped by the scales we use to measure the phenomena of these concepts. We know that hypnosis and dissociation are not identical phenomena. As stated earlier in this chapter, their historical definitions and contemporary measurements are not the same. From the overview of the scales, it also can be observed that the first hypnotizability scale was developed in 1959, whereas the first dissociation scale was developed more than 25 years later. In these years a shift in attention has occurred from hypnotizability to dissociation research. In the last 10 years, more scales measuring dissociation have been developed than are known for hypnotizability. The development of this range of diagnostic tools has gone along with the increasing prevalence of dissociative disorders diagnoses. If dissociation was a clear cut phenomenon, like length, or temperature, only one scale would be sufficient. Of course, this view is rather naive, but every dissociation scale seems to focus on a somewhat different aspect of the complex construct of dissociation serving a research goal or fitting into a broader theory.

Consistent with this assumption, intercorrelations are not high enough ($r = 0.6–0.7$) to use different hypnotizability scales as interchangeable measures (Frischholz et al. 1992a). There is no hyp-

notizability scale that excludes dissociation from its measurement; moreover, there is no dissociation subscale in hypnotizability scales. Dissociation is an element that cannot be measured separately, presumably because in hypnosis there is always an interactive component allowing suggestibility to sneak in as a confounding factor. Overall, hypnosis seems to serve as a broader concept than dissociation does. Several authors have noted a (clinical) relationship between hypnotizability and dissociation, showing that patients with a dissociative disorder have higher hypnotizability scores than other groups and showing correlations between dissociation and hypnotizability in PTSD patients (Frischholz 1985; Frischholz et al. 1992a; Spiegel et al. 1988).

Carlson and Putnam (1989) consider the scales that are used to measure hypnotizability and those that measure dissociation to be developed from different concepts; therefore, the scales should not be equated. Carlson (1994) concludes that the ability to experience hypnotic phenomena and the tendency to dissociate on a day-to-day basis are related but distinct constructs. She describes unpublished research by Perry who selected three groups of subjects according to their level of hypnotizability (low, medium, and high). He found the mean scores for the levels of dissociativity to be 10.3, 18.5, and 30.8, respectively, indicating that higher levels of hypnotizability are related to higher DES scores (Carlson 1994). The statistical relationship between measures of hypnotizability and dissociation was performed in a study of 311 undergraduates by using DES (total score) and HGSHS (summary score), showing significant correlations of .12 ($P < .05$), and by using DES (total score) with subjects' self-ratings of hypnotizability, showing correlations of .13 ($P < .05$) (Frischholz et al. 1992a). These correlations, however, are of low magnitude, and the findings suggest that individual differences in the frequency of self-reported dissociative experiences are not strongly related to individual differences in hypnotizability in student populations.

Hypnosis and dissociation scales include items from different domains. Hypnotizability scales measure alterations in motor, sensory, and cognitive functions, whereas the dissociation scales measure alterations in memory, awareness, identity, cognitive

functions, and perceptions. In hypnotizability scales, hypnosis is mostly experienced after a formal induction procedure. Hypnosis occurs within a specific time frame and can be considered a micro-level experience. It lasts as long as the measurement takes, or less. In an experimental or clinical situation, except for self-hypnosis, the hypnotic experience is observed by an observer or therapist; in most dissociation measurements, dissociation is experienced outside of the clinical setting, in the life of the subjects, during or following sequential time frames. The amount, frequency, or intensity of dissociation is later reported in questionnaires or interviews. Hypnosis can occur after induction, in an experimental or clinical setting, and is therefore controlled. Dissociation occurs more or less spontaneously, after a trigger that is or is not recognized, and it occurs nonvolitionally. Dissociation scales rely on self-reported phenomena, reflecting a subject's memory, affect, behavior, perception, knowledge, or attitude. In most of the scales, the dissociative symptoms are reported, not observed, at least not during measurement. The CADSS and the CDC are the only questionnaires in which dissociation can be measured and dissociative phenomena observed during the interview. Dissociation therefore relies mostly on self-observation. Hypnosis, on the other hand, is mostly measured after and by inducing and evaluating the phenomena (e.g., arm levitation, catalepsy, hallucination, or anesthesia). Hypnotizability can be measured in a group or an individual. Only in the HIP is dissociation measured by a (motor) control differential between an elevated and a nonelevated arm. Dissociation is measured in a hypnotic context. Table 4–1 summarizes the most prominent differences in the hypnotizability and dissociation scales.

The Role of Absorption in Dissociation and Hypnotizability

The dissociative compartmentalization of experience is accomplished through a complementary focusing of attention. Hypnotic and dissociative phenomena may be understood as clarifying ex-

Table 4–1. Differences in hypnotizability scales versus dissociation scales

Hypnotizability scales	Dissociation scales
Induced hypnosis	Not induced
Suggested experience	Spontaneous and involuntary experience
Phenomena at the time of trance	Phenomena on day-to-day basis
Subjective estimate or observable behavioral characteristics	Self-reports, written questionnaires, or interviews (post-dissociation)
Individual or in group	Individual
Microlevel experience, one time frame	Macrolevel experience, sequential time frame
Measures hypnotizability	Measures dissociativity

tremes of human attentional processes (Spiegel et al. 1988). Absorption is described as a tendency to become fully involved in an imaginative or ideational experience. Individuals prone to this type of cognition are more highly hypnotizable than those who never fully engage in such experiences. The Tellegen Absorption Scale (TAS; Tellegen and Atkinson 1974) is a measure of involvement in various imaginative activities suggestive of passive and effortless rather than active attention. This scale was developed through factor analysis and consists of true/false items on the following subscales: dissociation, openness to experience, devotion-trust, autonomy-criticality, reality absorption, and fantasy absorption. There is some similarity with the fantasy-prone personalities as described by Barber and Wilson (1977) and later by Lynn and Rhue (1994). Correlational studies of hypnotizability have used the TAS, showing correlations usually at .40 (Roche and McConkey 1990). Two separate focused attentional abilities can be discriminated: 1) moderately focused attention, resembling ambient attention; and 2) extremely focused attention and disattention, related to hypnotizability. The first is the ability to attend moderately so that noise in the environment is no longer disruptive but may be attended and the second is the ability to attend so fully to a task that noise

and irrelevant stimuli in the environment are apparently not even noticed and provide no distraction (Crawford 1969).

Using the HGSHS, Glisky and Kihlstrom (1993) investigated the relationship among hypnotizability and absorption, "intellectance" (or intelligence), and liberalism, all of which are different kinds of what they described as "openness," in 651 subjects. They found modest relationships among the three dimensions of openness, and only absorption was significantly related to hypnotizability. They concluded that by adding intellectance and liberalism to absorption, the prediction of hypnotizability could not be enhanced. Absorption and hypnosis share a kind of imaginative involvement that is not necessarily part of other kinds of openness, such as intellectance and liberalism (Glisky and Kihlstrom 1993). Absorption or imagery abilities are generally related to hypnotizability, but they do not appear to be necessary in all cases, and they only explain a relatively small proportion of the variance in research. Frischholz et al. (1987) found correlation scores ranging from .33 to .53 between HIP scores and absorption scores by using the TAS in three groups: smokers (n = 226), phobia patients (n = 95), and chronic pain patients (n = 65).

A few items of the TAS describe experiences of dissociation (e.g., item 13: I sometimes step outside my usual self and experience an entirely different state of being; item 22: If I wish, I can imagine that my body is so heavy that I could not move it if I wanted to). These items refer to an altered sense of reality and the self. As the focus on the attentional object becomes magnified, and other aspects recede from awareness, this can create feelings of distortion and unreality of the individual. This description is certainly like the experience of dissociation. However, lessening of reality testing in dissociation is not invariably part of the absorption experience. If so, it would seem that all of those who were capable of absorption would also be capable of entering a hypnotic state. This seems not to be the case. Although absorption experiences are related to feelings of unreality and dissociation, they are not the same. Both absorption and dissociation can be seen as complementary and essential aspects of hypnosis. The capacity for absorption allows the individual to become fully engaged in the

hypnotic suggestion, and the capacity for dissociation allows the individual temporarily to suspend or disengage from or to other levels of awareness, finally resulting in a different processing of information.

Highly hypnotizable individuals have the capacity to become involved in internal stimuli and thus become more distanced or dissociated from their environment. However, these individuals also have the capacity to become absorbed in external stimuli. The object of attentional variables can differ, but they do have the ability to engage and be immersed in their imagination and perception.

A Continuum Perspective of Hypnotizability and Dissociation

A person might inherit or develop a dissociative capacity in early life. This dissociative capacity seems to differ from the capacity that underlies the ability to enter trance: it involves the ability to segregate and idiosyncratically encode experience into separate psychological or psychobiological processes, with associated alterations in identity. Among nonclinical populations, extreme distress may significantly increase the prevalence and severity of transient dissociative phenomena and anxiety (e.g., the experience of witnessing an execution was associated with the development of dissociative symptoms in several journalists [Freinkel et al. 1994]). These phenomena provide further evidence of the role that dissociation plays in the response to inescapable stress or trauma and are of considerable clinical and theoretical importance in view of the lifetime prevalence of traumatic experiences in the general population (Breslau and Davis 1992).

Dissociation can be seen as one extreme on a continuum of awareness and can describe a rather wide range of clinical phenomena. This continuum of awareness ranges from full awareness to suppression, denial, repression, and dissociation. Braun (1988) developed a model for understanding the phenomena of dissociation by dividing dissociation into behavior, affect, sensation, and

knowledge changes of general awareness. These four phenomenological processes function in parallel on a time continuum (Braun 1988). The model seemed conceptually well thought out but was rather hard to operationalize in research and clinical practice.

Dissociation also can be seen as a continuum ranging from minor or normative forms to major or pathological forms (Bernstein and Putnam 1986). Evidence for the continuum of dissociation comes from studies of the distribution of hypnotizability in both healthy control subjects and psychiatric populations and studies of the distribution of dissociation using the DES (Bernstein and Putnam 1986). The continuum of dissociation ranges from a normal to a dissociative episode, dissociative disorder, posttraumatic disorder, atypical disorder, atypical personality disorder, and finally DID, where intensity/severity and frequency or the experienced phenomena are cumulative or scaled along the same axis. Although it has been proposed that PTSD is on the continuum of dissociative disorders (Braun 1988), it is not categorized as a dissociative disorder in DSM-IV, although some good evidence of dissociative symptoms has been found in patients with PTSD (Bremner et al. 1992, 1993d; Koopman et al. 1994; Spiegel et al. 1988). In DSM-IV, a dissociative symptom is described as a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment. The dissociative disorders seem not to be characterized by a single set of symptoms that qualitatively differentiate to make the diagnosis, but rather by quantitative differences in the frequency, extent, or intensity of dissociative symptoms displayed by individuals (Kihlstrom et al. 1994).

When the DES was developed, Bernstein and Putnam (1986) presumed the number and frequency of dissociative experiences to lie along a continuum. This continuum was their first hypothesis tested in developing the DES, and it proved to be of major significance in the design of the scale. Most definitions of dissociation are concerned with distinguishing normal from abnormal or pathological dissociative experiences. The definition of what should be considered pathological changed over time since the

early dissociation theory of Janet. Nemiah (1995) considered pathological dissociative reactions to be characterized by a disruption in the individual's sense of identity and by disturbances of memory. There has been a debate about the threshold or cutoff between normal and pathological dissociation. For the DES, there is no consensus. Some report a score higher than 15–20 to be pathological (Ross et al. 1991), whereas some are in favor a higher score of 30 (Carlson et al. 1993). A cutoff score may overestimate the risk of pathological dissociation in the population at large. Kihlstrom (1994) reports on a sample collected at the University of Arizona in which 10% of subjects exceeded a cutoff score of 20 on the DES and 6% exceeded a cutoff score of 30. He recommends the need for a normative study of dissociative experiences in a sample that is representative of the population at large.

The setting of somewhat arbitrary thresholds of severity is intended to define more clinically relevant and homogeneous groupings but creates a gap between severe and milder cases on what may actually be a continuum of severity. These problems might be circumvented by using continuum measures of dimensions in research studies. Accordingly, it can be useful to approach dissociation as a dimensional construct in which pathological cases exist on a continuum with subclinical levels of dissociation and levels leading to dissociative disorders with failure of integration. Two dimensional constructs can be described: state-dependent emotional disturbances on one end and personality alteration on the other.

A continuum in hypnotizability has been evidenced in previous research on hypnotizability scales. Various normative data were collected in past decades when different hypnotizability scales were used. Routine hypnotizability assessment could be useful in differential diagnosis of patients with psychopathological disorders. Frischholz et al. (1992b, 1992c) used hypnotizability measurement in different patient populations. Dissociative disorder patients in this study had significantly higher hypnotizability scores, on the SHSS and the HIP, than groups of patients with schizophrenia, mood disorders, and anxiety disorders and healthy college students. Patients with a dissociative disorder were ob-

served to have significantly higher hypnotizability scores on various measures compared with healthy control subjects or other clinical groups. Dissociative disorder patients initially also recalled significantly fewer items when the posthypnotic amnesia suggestion was in effect and reversed significantly more items when the suggestion was canceled. It can be concluded that routine hypnotizability assessment may be useful in the differential diagnosis of patients with dissociative disorders (Frischholz et al. 1992b, 1992c). Hypnotizability also can serve as a predictor of outcome in treatment. Hypnotizability and living with a significant other predicted the 2-year maintenance of treatment response on smoking abstinence following a single-session intervention with self-hypnosis (Spiegel et al. 1993).

Compared with hypnosis research, dissociation is a relatively new concept in research. One of the central differences seems to be that in hypnotizability research, subjects are brought to or guided in the dissociated or altered state of consciousness, whereas in dissociation research, subjects report from a sort of metaperspective about feelings and memories in these altered dissociated states.

Mind-Body Relations: Hypnosis and Dissociation

> Parts of the body that previously experienced physical disease of trauma seem to be especially vulnerable to reactivation of that response with hypnosis. High hypnotizable individuals are likely to use their intensified mind/body relatedness unwittingly as a means of experiencing and expressing conflict. (Spiegel 1994)

Research in previous decades has provided considerable evidence for the importance of suggestion and hypnotic ability in the healing or amelioration of various somatic disorders (Bowers and Kelly 1979). The facts of hypnotic influence sometimes exceed the capacity of science to understand them. How would one account for the well-witnessed success in Mason's case (1952; 1955), which describes suggested healing of a severe congenital skin disease one limb at a time? Different placebo-controlled studies have re-

ported reduced pain and anxiety during painful procedures (Zeltzer and LeBaron 1982), treatment of nausea and vomiting in chemotherapy (Zeltzer et al. 1984), treatment of irritable bowel disease (Whorwell et al. 1984, 1987), and effects on smoking cessation (Spiegel et al. 1993; Williams and Hall 1988) when hypnosis is used as treatment. These results confronted many people with the relationship between words and healing or between mind and body and have led to the question, How does information received and processed at a semantic level become transduced into information at a somatic level?

The work of Barber (1961), Bowers and Kelly (1979), Frankel (1987), and Spiegel and Vermetten (1994) has shown that hypnosis and subsequent dissociative states have unusual effects on the body. These states could be viewed as vehicles for increased control over neurophysiological and peripheral somatic functions. The literature suggests that highly hypnotizable individuals and those with dissociative symptoms are capable of an unusual degree of psychological control over various somatic functions or conversely demonstrate a loss of control over these various functions. Highly hypnotizable subjects may dissociate without provocation of trauma and suffer more dissociative symptoms when they sustain traumatic experiences. Dissociation enables one to detach from painful or acute traumatic situations but is complicated by a failure to integrate. It therefore can be seen as beneficial for the moment but harmful in the long run.

The somatoform disorders could be viewed as an involuntary unconscious use of dissociative defenses. These defenses could be understood as conversion symptoms—disturbances of sensory or motor function that follow the patient's model of illness rather than neuroanatomical pathways. These symptoms can be conceptualized as dissociative phenomena and are related to hypnotizability (Wickramasekera 1995). In a sample of patients with somatoform disorders ($n = 83$), the hypnotizability was not normally distributed. The patients' score for hypnotizability on the HGSHS was significantly higher ($P < .001$) than that of control subjects ($n = 78$). Both low- and high-scoring patients had a larger percentage of somatic symptoms than psychological symptoms,

whereas somatic and psychological symptoms were more evenly distributed among control subjects.

There is an intensified relationship with the body in both extremes of high- and low-hypnotizable persons. Highly hypnotizable individuals tend to become intensely absorbed in noxious sensations and tend to develop dissociative (in this case somatoform) disorders. Low-hypnotizable individuals have an inability to block out noxious sensations with normal levels of concentration and absorption (Kirmayer et al. 1994) and may be prone to react with cognitions of control rather than cognitions of loss of control. It is known that individuals with low hypnotizability lack words for feelings (Frankel et al. 1977). Threat perception in individuals with low hypnotizability may be absent from verbal report or consciousness but may be present in measures of sympathetic activation or motor behavior. They are hypothesized to "know the words but miss the music." They develop primarily somatic symptoms and do not react with psychological symptoms such as dissociative experiences. Highly hypnotizable individuals may spontaneously enter the hypnotic mode of information processing and experience "involuntary" changes in perception, memory, and mood that can amplify perception of fear and pain; they are prone to "surplus pattern recognition," seeing meaning in events that seem randomly distributed or meaningless to low-hypnotizable persons; and they are at risk for threat-related disorders because they are prone to "surplus empathy," in which they involuntarily absorb the pain or negative affect of others (Wickramasekara 1995). These notions relate to the long-standing clinical impression of an association between conversion, hysteria, and high hypnotizability. It may take less severe stress or trauma to trigger a conversion symptom or other dissociative symptom in individuals who are highly hypnotizable. Highly hypnotizable individuals seem to be vulnerable to conversion symptoms or conversion disorder, suggesting that hypnotic states may be mobilized spontaneously or may produce pseudosomatic conversion symptoms (Bliss 1984; Nemiah 1993). For example, in a review of special characteristics of highly hypnotizable persons, Wilson and Barber (1981, 1983) observed that 60% of their study sample of

highly hypnotizable subjects had experienced pseudocyesis, with symptoms that included amenorrhea, breast changes, and abdominal enlargement. These subjects also experienced dramatic physical symptoms stimulated by stress. Patients with PTSD show similar dissociative symptoms as those of dissociative disorder patients (Bremner et al. 1992, 1993d; Hyer et al. 1993). Earlier findings show higher hypnotizability in patients with PTSD compared with patients who have a general anxiety disorder (Spiegel et al. 1988).

Analogous to the way we can regard dissociation as a dimensional construct in which pathological cases exist on a continuum with subclinical levels of dissociation, Kirmayer et al. (1994) propose the same for somatization. For somatization, the focus is on three dimensional constructs: 1) the tendency to experience and report functional symptoms, 2) the tendency to worry or to be convinced that one is sick, and 3) the tendency for some individuals with depression or anxiety to present clinically with predominantly somatic symptoms (Kirmayer et al. 1994). This analogy suggests that dissociation may be elicited by, and may in turn represent, an adaptation to somatic distress. In addition to the social learning processes of modeling and reinforcement, there is growing evidence that childhood traumatic experiences affect body perceptions that may be associated with medically unexplained somatic symptoms in adulthood. In a group of 14 psychiatric inpatients with dissociative disorders measured with the DDIS (Ross et al. 1989a), more gastrointestinal symptoms, pain symptoms, cardiopulmonary symptoms, and conversion symptoms were reported compared with a matched inpatient group with few dissociative symptoms (Saxe et al. 1994). Somatization is a serious problem for patients with dissociative disorders. These patients have more somatic symptoms, are more likely to have a somatization disorder, and use more medical services than patients who do not dissociate. Women with chronic pelvic pain, in a study by Walker et al.(1992), were more likely to use dissociation as a coping mechanism, to show current psychological distress, to see themselves as medically disabled, to experience social decrements in function, and to amplify physical symptoms. In Walker et al.'s (1992) study, women with a history of childhood abuse had

higher scores on measures of psychological distress, somatization, and dissociation. Pseudoseizures and their relationship to dissociation need further exploration. There is good evidence that pseudoseizures originate from dissociated personalities or egostates, are expressions of dissociated memories of child abuse, and can be triggered by recent stresses or traumas (Alper 1994; Bowman 1993; Loewenstein and Putnam 1988). Spiegel (1991) suggests that there is a dissociative syndrome associated with certain kinds of temporal lobe epilepsy that is phenomenologically similar to classical dissociative disorders but that is historically distinct. Gainer (1993) describes how hypnosis can be useful in treating dissociated traumatic memories in a case of reflex sympathetic dystrophy. Prospective longitudinal studies are needed to relate these findings adequately to the hypotheses.

Patients with extreme dissociative disorders, such as DID, grossly show these unusual somatic symptoms (Ross 1994). Ross describes somatic disorders involving genitourinary functioning to be natural consequences of sexual abuse. Siemens and Ross (1991) also have shown that disorders of the gastrointestinal tract, such as irritable bowel syndrome, are associated with a history of trauma. Psychosomatic symptoms from all body symptoms often can be considered dissociative and related to chronic severe childhood trauma (Ross et al. 1989b). Certain somatic disorders also have been found to be associated with higher scores on the DES. These disorders include the luteal phase of premenstrual syndrome and bulimia (Carlson 1994). Ross (1994) reports anecdotal observations like fast wound healing and suggests that lower doses of narcotics could be required in terminal malignancies for those who have higher DES scores. He reports higher rates of delirium tremens and postoperative psychosis in subjects who have high scores on the DES. These observations give rise to a link between trauma, dissociation, somatization, and pathophysiology.

In a study in psychologically disturbed adolescents, B. Sanders and Giolas (1991) tested their hypothesis that dissociation is positively correlated with stress or early experiences of abuse. They found support for the view that dissociation represents a reaction to early negative experience. In their view, MPD can be placed at

the extreme end of a continuum of dissociative sequelae of childhood trauma. B. Sanders and Giolas (1991) stress the importance of trying to identify psychiatric patients with prominent dissociative characteristics or symptoms and attempting to correlate this phenomenology with negative earlier experiences. Although in children the dissociative symptomatology may be subtle, the effects in adults all relate to the problem of embodiment, which varies from DID to eating disorders, somatization disorder, self-mutilation, suicide, and suicide attempts (McElroy 1994; Roesler and McKenzie 1994; Young 1992). The central problem in disorders where dissociation is involved is not the barrier of amnesia, but the disruption in integration of self across highly discrete states of consciousness (Putnam 1991), leading to segregation and lack of cohesion of normal embodiment processes (van der Kolk 1994).

Controlled Versus Noncontrolled Dissociation: The Role of Trauma

A great deal of the current literature on dissociation connects the phenomena of dissociation etiologically with trauma, including combat-related trauma, childhood physical or sexual abuse, civilian violence such as rape, and natural disasters such as earthquakes, floods, and fires. Although there is a strong relationship with these categories of trauma, dissociation seems not invariably linked to trauma itself. It occurs with the existence of two or more incompatible mental contents that exclude one another from consciousness (Spiegel 1990). The person is unable to think about two or more contents in connection with one another. The perception of something traumatic can be or can have incompatible mental content.

Recent literature shows that individuals who respond to traumas or overwhelming events by using dissociation develop long-term changes in psycho- and neurobiological systems (Bremner et al. 1993c; Charney et al. 1993; Koopman et al. 1994; Krystal et al. 1995; Southwick et al. 1994). One initial study has found evidence for alterations in dopaminergic, serotonergic, and opioid systems associated with the clinical expression of dissociation (Demitrack

et al. 1993). Dissociative symptoms are important elements of the long-term psychopathological response to trauma (Spiegel et al. 1988). Long-term changes in neurobiological and neurochemical systems may in turn result in dissociative responses to subsequent events, increased general dissociative symptoms, and increased risk for stress-related psychiatric disorders (Bremner et al. 1995). These dissociative disorders can be understood as more extreme and unconscious eruptions of normal dissociative phenomena, often elicited in the face of traumatic stress (Carlson 1994; Spiegel 1993).

Essential in the pathophysiology of a dissociative disorder or DID is the capacity to dissociate (Braun and Sachs 1985; Putnam 1985). Hypnosis has been thought of as a controlled dissociation, and dissociation in turn has been thought of as a form of spontaneous self-hypnosis. Hypnosis, in this respect, is a valuable tool in the treatment of dissociative disorders: what was originally invoked in the individual by traumatic experiences can be beneficially influenced in treatment by controlled hypnotic interventions. Kluft (1982) and Putnam (1989) stress that, although hypnosis can simulate phenomena of different dissociative reactions or disorders, there is no evidence that the profound disturbances in identity, consciousness, and memory as found in dissociative disorders can be caused by hypnosis.

It has been hypothesized that persons with DID tend to be highly hypnotizable, presumably because of their extensive use of hypnosis-like dissociative strategies in coping with (early) life trauma. Hypnotizable individuals are supposed to have a propensity to dissociate defensively under stress. First data do not seem to support this notion. In a matched control study among 54 sexually abused girls, ages 6–15 years, no significant differences were found in hypnotizability between abused subjects and control subjects (Putnam et al. 1995). There were significant differences in clinical dissociation initially and on 1-year retest between the groups. The highly hypnotizable subjects in the abused group were significantly more dissociative on the CDC than poorly hypnotizable subjects in the abuse group. Higher levels of clinical dissociation were associated with abuse by multiple perpetrators and copresence of physical abuse independent of sexual abuse. Put-

nam et al. (1995) discriminate a subgroup in abused children, described as having "double dissociation." This description means that these subjects show both high clinical dissociation and high hypnotizability. Double dissociation in traumatized children may subsequently be a marker for a dissociative disorder.

Dissociation ends when congruity among dissociated components of experience (behavior, affect, sensation, thought) is established (Braun 1988). Common in a broad array of psychotherapeutic techniques is the intent to orient the patient back to current sensory experience with a strong emphasis on learning control (Allen 1993; Braun 1988; Spiegel 1993).

Summary: Perspective on the Measurement of Two Distinct Constructs

Measuring hypnotizability where hypnosis is introduced as a controlled and structured dissociation could serve the goals of the therapist who measures the susceptibility level and the patient who seeks a strategy to modify control. Hypnotizability is described as a measurable concept with long-term stability and reproducibility within the individual. Various scales have been developed in the past 30 years for the measurement of both hypnotizability and dissociation, and recent research on the impact of trauma sheds new light on the relationship between hypnotizability and dissociation. Although most research on hypnotizability was done in the 1970s and early 1980s, a new perspective on the relationship between hypnosis and dissociation can evolve. The 1980s provided a body of literature on correlations between scales, reliability studies, and developments of new scales; however; research now focuses more on dissociation and dissociative disorders and its measurement. Hypnosis may account for many of the findings attributed to dissociation and dissociative disorders; the methodology of the measurements and the additional expertise from previous research could serve a valuable purpose.

Dissociation seems to account for a shift in modern psychology and psychiatry through its widespread clinical relevance and rec-

ognition by cognitive sciences. It is strongly related to consciousness, conflict/trauma, and unity of the self. Dissociation can be assessed by questionnaires in which the intensity of dissociation or capacity to dissociate can be measured. We favored describing dissociation as a dimensional construct where pathological cases exist on a continuum with subclinical levels of dissociation. The contribution of hypnosis as a descriptive or explanatory variable in dissociation has not yet gained consensus. Although dissociation can be regarded as one aspect of the broader concept of hypnosis, the operation of both constructs is different. Dissociation raises fundamental questions about the relationship between mind and body. It can be concluded that there is a strong conceptual relationship between hypnosis and dissociation. A troublesome relationship derives from measuring differences between the hypnotizability and dissociativity scales.

Dissociation and dissociative disorders reflect an emphasis by psychiatric nosology on turning the concept and the disorders into discrete entities. Hypnosis and dissociation have a long history, share historical analogies, and are widely used concepts in research and clinical practice, but both concepts leave us with some fundamental questions. Despite a widespread stable acceptance in academic and clinical settings, hypnosis and hypnotizability leave unanswered questions about the concept of hypnosis, the variety of scales used to measure hypnotizability, and the contributing factors to hypnois. Dissociation and the dissociative disorders leave us with even more unanswered questions. Recent theories might need to change in response to new data. At least in the clinical connection between hypnotizability and dissociation, trauma plays a major role. A combination of the methodologies used for measuring hypnosis and dissociation can lead to a better understanding of their combined meaning in research and clinical practice.

References

Allen JG: Dissociative processes: theoretical underpinnings of a working model for clinician and patient. Bull Menninger Clin 57:287–308, 1993

Alper K: Nonepileptic seizures. Neurol Clin 12:153–173, 1994

American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition. Washington, DC, American Psychiatric Association, 1994

Barber TX: Physiological effects of "hypnosis." Psychol Bull 58:390–419, 1961

Barber TX: Measuring "hypnotic like" suggestibility with and without "hypnotic induction": psychometric properties, norms, and variables influencing response to the Barber Suggestibility Scale (BSS). Psychol Rep (monogr suppl) 16:809–844, 1965

Barber TX: Hypnosis: A Scientific Approach. New York, Van Nostrand Reinhold, 1969

Barber TX, Wilson SC: Hypnosis, suggestions, and altered states of consciousness: experimental evaluation of the new cognitive behavioral theory and the traditional trance state theory of "hypnosis." Ann N Y Acad Sci 296:34–47, 1977

Bernstein EM, Putnam FW: Development, reliability and validity of a dissociation scale. J Nerv Ment Dis 174:727–735, 1986

Bliss EL: Hysteria and hypnosis. J Nerv Ment Dis 172:203–206, 1984

Bowers KS, Kelly P: Stress, disease, psychotherapy and hypnosis. J Abnorm Psychol 88:490–505, 1979

Bowman ES: Etiology and clinical course of pseudoseizures: relationship to trauma, depression and dissociation. Psychosomatics 34:333–342, 1993

Braun BG: The BASK model of dissociation. Dissociation 1:4–23, 1988

Braun BG: Dissociative disorders as sequelae to incest, in Incest-Related Syndromes of Adult Psychopathology. Edited by Kluft RP. Washington, DC, American Psychiatric Press, 1990, pp 227–247

Braun BG, Sachs RG: The development of multiple personality disorder: predisposing, precipitating, and perpetuating factors, in Childhood Antecedents of Multiple Personality. Edited by Kluft RP. Washington, DC, American Psychiatric Press, 1985, pp 37–64

Bremner JD, Brett E: Increased dissociative states and long-term psychopathology in posttraumatic stress disorder. Journal of Traumatic Stress 10:37–49, 1997

Bremner JD, Southwick S, Brett E, et al: Dissociation and posttraumatic stress disorder in Vietnam combat veterans. Am J Psychiatry 149:328–333, 1992

Bremner JD, Scott TM, Delaney RC, et al: Deficits in short-term memory in posttraumatic stress disorder. Am J Psychiatry 150:1015–1019, 1993a

Bremner JD, Davis M, Southwick SM, et al: Neurobiology of posttraumatic stress disorder, in American Psychiatric Press Review of Psychiatry, Vol 12. Edited by Oldham JM, Riba MB, Tasman A. Washington, DC, American Psychiatric Press, 1993b, pp 183–205

Bremner JD, Steinberg M, Southwick SM, et al: Use of Structured Clinical Interview for DSM-IV Dissociative Disorders for systematic assessment of dissociative symptoms in posttraumatic stress disorder. Am J Psychiatry 150:1011–1014, 1993c

Bremner JD, Krystal JH, Southwick SM, et al: Functional neuroanatomical correlates of the effects of stress on memory. J Trauma Stress 8:527–555, 1995

Bremner JD, Mazure CM, Putnam FW, et al: Measurement of dissociative states with the Clinician-Administered Dissociative States Scale (CADSS). Journal of Traumatic Stress, in press

Breslau N, Davis GC: Posttraumatic stress disorder in an urban population of young adults: risk factors for chronicity. Am J Psychiatry 149: 671–675, 1992

Briere J, Runtz M: Augmenting Hopkins SCL scales to measure dissociative symptoms: data from two nonclinical samples. J Pers Assess 55: 376–379, 1990

Cardena E: The domain of dissociation, in Dissociation: Clinical and Theoretical Perspectives. Edited by Lynn SJ, Rhue JW. New York, Guilford, 1994, pp 15–32

Cardena E, Spiegel D: Dissociative reactions to the San Francisco Bay area earthquake. Am J Psychiatry 150: 474–478, 1993

Carlson EB: Studying the interaction between physical and psychological states with the Dissociative Experiences Scale, in Dissociation: Culture, Mind, and Body. Edited by Spiegel D. Washington, DC, American Psychiatric Press, 1994, pp 41–58

Carlson EB, Putnam FW: Integrating research on dissociation and hypnotizability: are there two pathways to hypnotizability? Dissociation 2:32–38, 1989

Carlson EB, Putnam FW, Ross CA, et al: Validity of the Dissociative Experiences Scale in screening for multiple personality disorder: a multicenter study. Am J Psychiatry 150:1030–1036, 1993

Charney DS, Deutch AY, Krystal JH, et al: Psychobiologic mechanisms of posttraumatic stress disorder. Arch Gen Psychiatry 50:294–299, 1993

Coe WC: Further norms on the Harvard Group Scale of Hypnotic Susceptibility, Form A. Int J Clin Exp Hypn 12:184–190, 1964

Coe WC: Experimental designs and the state-nonstate issue in hypnosis. Am J Clin Hypn 16:118–128, 1973

Corbetta M, Miezin FM, Dobmeyer S, et al: Attention modulation of neural processing of shape, color, and velocity in humans. Science 248: 1556–1559, 1990

Counts RM: The concept of dissociation. J Am Acad Psychoanal 18: 460–479, 1990

Crawford HJ: Brain dynamics and hypnosis: attentional and disattentional processes. Int J Clin Exp Hypn 42:204–232, 1994

Demitrack MA, Putnam FW, Rubinow DR, et al: Relation of dissociative phenomena of cerebrospinal fluid monoamine metabolites and beta-endorphin in patients with eating disorders: a pilot study. Psychiatry Res 49:1–10, 1993

Dennett D: Consciousness Explained. Boston, Little, Brown, 1991

Denny EB, Hunt RR: Affective valence and memory in depression: dissociation of recall and fragment completion. J Abnorm Psychol 101: 575–580, 1992

Derogatis LR, Lipman RS, Rickels K, et al: The Hopkins Symptom Checklist—90 (HSCL-90): a self-report symptom inventory. Behav Sci 19: 1–15, 1974

Ellenberger HF: The Discovery of the Unconscious. New York, Basic Books, 1970

Erdelyi MH: Dissociation, defense, and the unconscious, in Dissociation: Culture, Mind, and Body. Edited by Spiegel D. Washington, DC, American Psychiatric Press, 1994, pp 3–20

Evans F: Posthypnotic amnesia: dissociation of content and context, in Hypnosis and Memory. Edited by Pettinati HM. New York, Guilford, 1992, pp 157–192

Feldman JA, Ballard DA: Connectionist models and their properties. Cognitive Science 6:205–254, 1982

Fischer DG, Elnitsky S: A factor analytic study of two scales measuring dissociation. American Journal of Clinical Hypnotherapy 32:200–206, 1990

Forbes EJ, Pekala RJ: Predicting hypnotic susceptibility via a phenomenological approach. Psychol Rep 73:1251–1256, 1993

Frankel FH: Significant developments in medical hypnosis during the past 25 years. Int J Clin Exp Hypn 35:231–247, 1987

Frankel FH: Hypnotizability and dissociation. Am J Psychiatry 147: 823–839, 1991

Frankel FH, Apfel-Savitz R, Nemiah JC, et al: The relationship between hypnotizability and alexithymia. Psychother Psychosom 8:172–178, 1977

Freinkel A, Koopman C, Spiegel D: Dissociative symptoms in media eyewitnesses of an execution. Am J Psychiatry 151:1335–1339, 1994

Frischholz EJ: The Relationship among dissociation, hypnosis and child abuse in the development of multiple personality, in Childhood Antecedents of Multiple Personality. Edited by Kluft RP. Washington, DC, American Psychiatric Press, 1985, pp 99–126

Frischholz EJ, Tyron WW, Vellios AT, et al: The relationship between the Hypnotic Induction Profile and the Stanford Hypnotic Susceptibility Scale, Form C: a replication. Am J Clin Hypn 22:185–196, 1980

Frischholz EJ, Spiegel D, Trentalange MJ, et al: The Hypnotic Induction Profile and absorption. Am J Clin Hypn 30:87–93, 1987

Frischholz EJ, Braun BG, Sachs RG, et al: Construct validity of the Dissociative Experiences Scale, II: its relationship to hypnotizability. Am J Clin Hypn 35:145–152, 1992a

Frischholz EJ, Lipman LS, Braun BG, et al: Psychopathology, hypnotizability and dissociation. Am J Psychiatry 149:1521–1525, 1992b

Frischholz EJ, Braun BG, Lipman LS, et al: Suggested posthypnotic amnesia in psychiatric patients and normals. Am J Clin Hypn 35:29–39, 1992c

Fromm E, Nash MR (eds): Contemporary Hypnosis Research. New York, Guilford, 1992

Gabbard GO: Psychodynamic Psychiatry in Clinical Practice, the DSM-IV Edition. Washington, DC, American Psychiatric Press, 1994

Gainer M: Somatization of dissociated traumatic memories in a case of reflex sympathetic dystrophy. Am J Clin Hypn 36:124–131, 1993

Ganaway GK: Hypnosis, childhood trauma and dissociative identity disorder: towards an integrative theory. Int J Clin Exp Hypn 43:127–144, 1995

Glisky M, Kihlstrom JF: Hypnotizability and facets of openness. Int J Clin Exp Hypn 41:112–123, 1993

Goodglass H, Budin C: Category and modality specific dissociations in word comprehension and concurrent phonological dyslexia. Neuropsychologia 26:67–78, 1988

Hathaway SR, McKinley JC: Minnesota Multiphasic Personality Inventory–2. Minneapolis, MN, University of Minnesota, 1989

Herman JL: Trauma and Recovery. New York, Basic Books, 1992

Hilgard ER: Hypnotic Susceptibility. New York, Harcourt, Brace & World, 1965

Hilgard ER: Divided Consciousness: Multiple Controls in Human Thought and Action. New York, Wiley, 1977

Hilgard ER: Divided Consciousness: Multiple Controls in Human Thought and Action, Expanded Edition. New York, Wiley, 1986

Hilgard ER: Research advances in hypnosis: issues and methods. Int J Clin Exp Hypn 35:248–264, 1987

Hilgard ER: Dissociation and theories of hypnosis, in Contemporary Hypnosis Research. Edited by Fromm E, Nash MR. New York, Guilford, 1992, pp 69–101

Hilgard JR: Personality and Hypnosis: A Study of Imaginative Involvement, Revised Edition. Chicago, University of Chicago Press, 1979

Hornstein NL, Putnam FW: Clinical phenomenology of child and adolescent dissociative disorders. J American Acad Child Adolesc Psychiatry 31:1077–1085, 1992

Horowitz MJ, Wilner NR, Alvarez W: Impact of Events Scale: a measure of subjective distress. Psychosomatic Medicine 41:208–218, 1979

Hyer LA, Albrecht JW, Boudewyns PA, et al: Dissociative experiences of Vietnam veterans with chronic posttraumatic stress disorder. Psychol Rep 73:519–530, 1993

Jaschke V, Spiegel D: A case of probable dissociative disorder. Bull Menninger Clin 56:246–260, 1992

Kihlstrom JF: The cognitive unconscious. Science 37:1445–1452, 1987

Kihlstrom JF: Hypnosis: a sesquicentennial essay. Int J Clin Exp Hypn 40:219–227, 1992

Kihlstrom JF: One hundred years of hysteria, in Dissociation: Clinical and Theoretical Perspectives. Edited by Lynn SJ, Rhue JW. New York, Guilford, 1994, pp 365–394

Kihlstrom JF, Glisky ML, Angiulo MJ: Dissociative tendencies and dissociative disorders. J Abnorm Psychol 103:117–124, 1994

Kirmayer LJ, Robbins JM, Paris J: Somatoform disorders: personality and the social matrix of somatic distress. J Abnorm Psychol 103:125–136, 1994

Klein RM, Doane BK (eds): Psychological Concepts and Dissociative Disorders. Hillsdale, NJ, Lawrence Erlbaum, 1994

Kluft RP: Varieties of hypnotic interventions in the treatment of multiple personality. Am J Clin Hypn 24:230–240, 1982

Kluft RP: Multiple personality, in American Psychiatric Press Review of Psychiatry, Vol 10. Edited by Tasman A, Goldfinger SM. Washington, DC, American Psychiatric Press, 1991, pp 161–188

Koopman C, Classen C, Spiegel D: Predictors of posttraumatic stress symptoms among survivors of the Oakland/Berkeley, California, firestorm. Am J Psychiatry 151:888–894, 1994

Krystal JH, Bennett A, Bremner JD, et al: Toward a cognitive neuroscience of dissociation and altered memory functions in post-traumatic stress disorder, in Neurobiological and Clinical Consequences of Stress: From Normal Adaptation to Post Traumatic Stress Disorder. Edited by Friedman MJ, Charney DS, Deutch AY. Philadelphia, JB Lippincott, 1995, pp 239–271

Kuzin IA: Hypnosis modelling in neural networks. Bull Math Biol 57:1–20, 1995

Lamas JR, del Valle-Inclan F, Blanco MJ, et al: Spanish norms for the Harvard Group Scale of Hypnotic Susceptibility, Form A. Int J Clin Exp Hypn 37:264–273, 1989

Loewenstein RJ: Dissociation, development and the psychobiology of trauma. J Am Acad Psychoanal 21:581–603, 1993

Loewenstein RJ, Putnam F: A comparison study of dissociative symptoms in patients with complex partial seizures, MPD, and PTSD. Dissociation 1:17–23, 1988

London P: The Children's Hypnotic Susceptibility Scale. Palo Alto, CA, Consulting Psychologists Press, 1962

Ludwig AM: The psychobiological functions of dissociation. Am J Clin Hypn 26:93–99, 1983

Lynn SJ, Rhue JW (eds): Dissociation: Clinical and Theoretical Perspectives. New York, Guilford, 1994

Marmar CR, Weiss DS, Schlenger DS, et al: Peritraumatic dissociation and posttraumatic stress in male Vietnam theater veterans. Am J Psychiatry 151:902–907, 1994

Mason AA: A case of congenital ichthyosiform erythrodermia treated by hypnosis. BMJ 2:422–423, 1952

Mason AA: Ichthyosis and hypnosis. BMJ 2:57, 1955

McElroy LP: Early indicators of pathological dissociation in sexually abused children. Child Abuse Negl 16:833–846, 1994

Miller M, Bowers K: Hypnotic analgesia: dissociated experience or dissociated control? J Abnorm Psychol 102:29–38, 1993

Minsky M: The Society of Mind. New York, Simon & Schuster, 1986

Morgan AH, Hilgard JR: The Stanford Hypnotic Clinical Scale for Children. Am J Clin Hypn 21:148–155, 1979

Morgan AH, Johnson DL, Hilgard ER: The stability of hypnotic susceptibility: a longitudinal study. Int J Clin Exp Hypn 21:78–85, 1974

Nemiah JC: Dissociation, conversion and somatization, in Dissociative Disorders: A Clinical Review. Edited by Spiegel D. Lutherville, MD, Sidran Press, pp 104–117, 1993

Nemiah JC: Dissociative disorders (hysterical neurosis, dissociative type), in Comprehensive Textbook of Psychiatry/VI, 6th Edition, Vol 1. Edited by Kaplan HI, Sadock BJ. Baltimore, MD, Williams & Wilkins, 1995, pp 1281–1293

Orne MT: The construct of hypnosis: implications of the definition for research and practice. Ann N Y Acad Sci 296:14–33, 1977

Orne MT, Hilgard ER, Spiegel H, et al: The relation between the Hypnotic Induction Profile and the Stanford Hypnotic Susceptibility Scales, Forms A and C. Int J Clin Exp Hypn 27:85–102, 1979

Parks RW, Long DL, Levine DS, et al: Parallel distributed processing and neural networks: origins, methodology and cognitive functions. Int J Neurosci 60:195–214, 1991

Perry C, Nadon R, Button J: The measurement of hypnotic ability, in Contemporary Hypnosis Research. Edited by Fromm E, Nash MR. New York, Guilford, 1992, pp 459–491

Piccione C, Hilgard ER, Zimbardo PG: On the degree of stability of measured hypnotizability over a 25-year period. J Pers Soc Psychol 56: 289–295, 1989

Putnam FW: Dissociation as a response to extreme trauma, in Childhood Antecedents of Multiple Personality. Edited by Kluft RP. Washington, DC, American Psychiatric Press, 1985, pp 65–97

Putnam FW: The switch process in multiple personality disorder and other state-change disorders. Dissociation 1:24–32, 1988

Putnam FW: Diagnosis and Treatment of Multiple Personality Disorder. New York, Guilford, 1989

Putnam FW: Dissociative phenomena, in American Psychiatric Press Review of Psychiatry, Vol 10. Edited by Tasman A, Goldfinger SM. Washington, DC, American Psychiatric Press, pp 145–160, 1991

Putnam FW, Helmers K, Trickett PK: Development, reliability, and validity of a Child Dissociation Scale. Child Abuse Negl 17:731–741, 1993

Putnam FW, Helmers K, Horowitz LA, et al: Hypnotizability and dissociativity in sexually abused girls. Child Abuse Negl 19:645–655, 1995

Ray WJ, June K, Turaj K, et al: Dissociative experiences in a college age population: a factor analytic study of two dissociation scales. Personality and Individual Differences 13:417–424, 1992

Repka RJ, Nash MR: Hypnotic responsivity of the deaf: the development of the University of Tennessee Hypnotic Susceptibility Scale for the Deaf. Int J Clin Exp Hypn 43:316–313, 1995

Riley KC: Measurement of dissociation. J Nerv Ment Dis 176:449–450, 1988

Roche SM, McConkey KM: Absorption, nature, assessment, and correlates. J Pers Soc Psychol 59:91–101, 1990

Roesler TA, McKenzie N: Effects of childhood trauma on psychological functioning in adults sexually abused as children. J Nerv Ment Dis 182:145–150, 1994

Ross CA: Dissociation and physical illness, in Dissociation: Culture, Mind, and Body. Edited by Spiegel D. Washington, DC, American Psychiatric Press, 1994, pp 171–184

Ross CA, Heber S, Norton GR: The Dissociative Disorders Interview Schedule: a structured interview. Dissociation 2:169–189, 1989a

Ross CA, Heber S, Norton GR: Somatic symptoms in multiple personality disorder. Psychosomatics 30:154–160, 1989b

Ross CA, Joshi S, Currie R: Dissociative experiences in the general population: a factor analysis. Hospital and Community Psychiatry 42:297–301 , 1991

Sainton K, Ellason J, Mayran L, et al: Reliability of the new form of the Dissociative Experiences Scale (DES) and the Dissociation Questionnaire (DIS-Q) (abstract), in Dissociative Disorders 1993: Proceedings of the Tenth International Conference on Multiple Personality/Dissociative States. Edited by Braun BG, Parks JP. Chicago, Rush-Presbyterian-St. Luke's Medical Center, 1993, p 125

Sanders B, Giolas MH: Dissociation and childhood trauma in psychologically disturbed adolescents. Am J Psychiatry 148:50–54, 1991

Sanders S: The perceptual alteration scale: a scale measuring dissociation. Am J Clin Hypn 29:95–102, 1986

Sarbin TR, Coe WC: Hypnosis: A Social Psychological Analysis of Influence Communication. New York, Holt, Rinehart & Winston, 1972

Sarbin TR: Dissociation: state, trait or skill? Contemporary Hypnosis 11:47–54, 1994

Sarbin TR: On the belief that one body may be host to two or more personalities. Int J Clin Exp Hypn 43:163–183, 1995

Saxe GN, Chinman G, Berkowitz R, et al: Somatization in patients with dissociative disorder. Am J Psychiatry 151:1329–1334, 1994

Shor RE, Orne EC: Harvard Group Scale of Hypnotic Susceptibility. Palo Alto, CA, Consulting Psychologists Press, 1962

Siemens JG, Ross CA: Childhood sexual abuse and somatic symptoms in patients with gastrointestinal disorders (abstract), in Proceedings of the Eighth International Conference on Multiple Personality/Dissociative States. Edited by Braun BG, Carlson EB. Chicago, Rush-Presbyterian-St. Luke's Medical Center, 1991, p 86

Sigalowitz SJ, Dywan J, Ismailos L: Electrocortical evidence that hypnotically induced hallucinations are experienced. Paper presented at the Society for Clinical and Experimental Hypnosis symposium, "Dissociations in Conscious Experience: Electrophysical and Behavioral Evidence," New Orleans, LA, October 9–13, 1991

Singer JL (ed): Repression and Dissociation: Implication for Personality Theory, Psychopathology, and Health. Chicago, University of Chicago Press, 1990

Southwick SM, Bremner JD, Krystal JH, et al: Psychobiologic research in post-traumatic stress disorder. Psychiatr Clin North Am 17:251–264, 1994

Spanos NP: Hypnotic behavior: a cognitive, social psychological perspective. Research Communications in Psychology, Psychiatry and Behavior 7:199–213, 1982

Spanos NP, Chaves JF (eds): Hypnosis: The Cognitive-Behavioral Perspective. Buffalo, NY, Prometheus Books, 1989

Spanos NP, Radtke HL, Hodgins DC, et al: The Carleton University Responsiveness to Suggestion Scale: stability, reliability, and relationships with expectancy and "hypnotic experiences." Psychol Rep 53:555–563, 1983

Spiegel D: Dissociation, double binds and posttraumatic stress in multiple personality disorder, in Treatment of Multiple Personality Disorder. Edited by Braun BG. Washington, DC, American Psychiatric Press, 1986, pp 61–77

Spiegel D: Hypnosis, dissociation and trauma: hidden and overt observers, in Repression and Dissociation. Edited by Singer JL. Chicago, University of Chicago Press, 1990, pp 121–142

Spiegel D: Neurophysiological correlates in patients of hypnosis and dissociation. J Neuropsychiatry Clin Neurosci 3:440–445, 1991

Spiegel D: Dissociation and trauma, in Dissociative Disorders: A Clinical Review. Lutherville, MD, Sidran Press, 1993, pp 117–131

Spiegel D (ed): Dissociation: Culture, Mind, and Body. Washington, DC, American Psychiatric Press, 1994

Spiegel D, Cardena E: The disintegrated experience: the dissociative disorders revisited. J Abnorm Psychol 100:366–387, 1991b

Spiegel D, Vermetten E: Physiological correlates of hypnosis and dissociation, in Dissociation: Culture, Mind, and Body. Edited by Spiegel D. Washington, DC, American Psychiatric Press, 1994, pp 185–209

Spiegel D, Cutcomb S, Ren C, et al: Hypnotic hallucination alters evoked potentials. J Abnorm Psychol 94:249–255, 1985

Spiegel D, Hunt T, Dondershine HE: Dissociation and hypnotizability in posttraumatic stress disorder. Am J Psychiatry 145:301–305, 1988

Spiegel D, Bierre P, Rootenberg J: Hypnotic alteration of somatosensory perception. Am J Psychiatry 146:749–754, 1989

Spiegel D, Frischholz EJ, Fleiss JL, et al: Predictors of smoking abstinence following a single-session restructuring intervention with self-hypnosis. Am J Psychiatry 150:1090–1097, 1993

Spinhoven PH, Baak D, Van Dyck R, et al: The effectiveness of an authoritative versus permissive style of hypnotic communication. Int J Clin Exp Hypn 36:182–191, 1988

Spitzer RL, Williams JB, Gibbon M: Structured Clinical Interview for DSM-III-R (SCID). New York, New York State Psychiatric Institute, Biometrics Research Department, 1987

Steinberg M: Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D). Washington, DC, American Psychiatric Press, 1993

Steinberg M: Systematizing dissociation: symptomatology and diagnostic assessment, in Dissociation: Culture, Mind, and Body. Edited by Spiegel D. Washington, DC, American Psychiatric Press, 1994, pp 59–88

Steinberg M, Rounsaville B, Ciccetti DV: The Structured Clinical Interview for DSM-III-R Dissociative Disorders: preliminary report on a new diagnostic instrument. Am J Psychiatry 147:77–83, 1990

Tellegen A, Atkinson G: Openness to absorbing and self-altering experiences (" absorption"), a trait related to hypnotic susceptibility. J Abnorm Psychol 83:286–277, 1974

van der Hart O, Spiegel D: Hypnotic assessment and treatment of trauma-induced psychoses: the early psychotherapy of H. Breukink and modern views. Int J Clin Exp Hypn 41:191–209, 1993

Vanderlinden J, Van Dyck R, Vandereyken MD: Dissociative experiences in the general population in the Netherlands and Belgium: a study with the Dissociative Questionnaire (DIS-Q). Dissociation 4:180–184, 1991

Vanderlinden J, Van Dyck R, Vandereyken W, et al: The Dissociation Questionnaire: development and characteristics of a new self-reporting questionnaire. Child Psychology and Psychotherapy 1: 21–27, 1993

Waelde LC, Fairbank JA, Uddo M, et al: Empirical development of an MMPI-2 subscale for assessing dissociative symptomatology in post-traumatic stress disorder. Paper and abstract presented at the International Society of Traumatic Stress Studies, Boston, November 1995

Walker E, Katon WJ, Neraas K, et al: Dissociation in women with chronic pelvis pain. Am J Psychiatry 149:534–537, 1992

Weitzenhoffer AM: Hypnotic susceptibility revisited. Am J Clin Hypn 22:130–146, 1980

Weitzenhoffer AM, Hilgard ER: Stanford Hypnotic Susceptibility Scale: Forms A and B. Palo Alto, CA, Consulting Psychologists Press, 1959

Weitzenhoffer AM, Hilgard ER: Stanford Hypnotic Susceptibility Scale: Form C. Palo Alto, CA, Consulting Psychologists Press, 1962

Wickramasekera IE: Somatization: concepts, data and predictions from the high risk model of threat perception. J Nerv Ment Dis 183:15–23, 1995

Williams JM, Hall DW: Use of single session hypnosis for smoking cessation. Addict Behav 13:205–208, 1988

Whorwell PJ, Prior A, Faragher EB: Controlled trial of hypnotherapy in the treatment of severe refractory irritable bowel syndrome. Lancet 12:1232–1234, 1984

Whorwell PJ, Prior A, Colgan SM: Hypnotherapy in severe irritable bowel syndrome: further experience. Gut 28:423–425, 1987

Wilson SC, Barber TX: Vivid fantasy and hallucinatory abilities in the life histories of excellent hypnotic subjects (" somnabules"): preliminary report with female subjects, in Imagery, Vol 2: Concepts, Results and Applications. Edited by Klinger E. New York, Plenum, 1981, pp 133–149

Wilson SC, Barber TX : The fantasy prone personality: implication for understanding imagery, hypnosis, and parapsychological phenomena, in Imagery: Current Theory, Research and Application. Edited by Sheikh AA. New York, Wiley, 1983, pp 340–387

Young L: Sexual abuse and the problem of embodiment. Child Abuse Negl 16:89–100, 1992

Zamansky HS, Ruehle BL: Making hypnosis happen: the involuntariness of the hypnotic experience. Int J Clin Exp Hypn 18:386–398, 1995

Zeltzer L, LeBaron S: Hypnosis and nonhypnotic techniques for reduction of pain and anxiety during painful procedures in children and adolescents with cancer. J Pediatr 101:1032–1035, 1982

Zeltzer L, Lebaron S, Zeltzer PM: The effectiveness of behavioral intervention for reduction of nausea and vomiting in children and adolescents receiving chemotherapy. J Clin Oncol 6:83–90, 1984